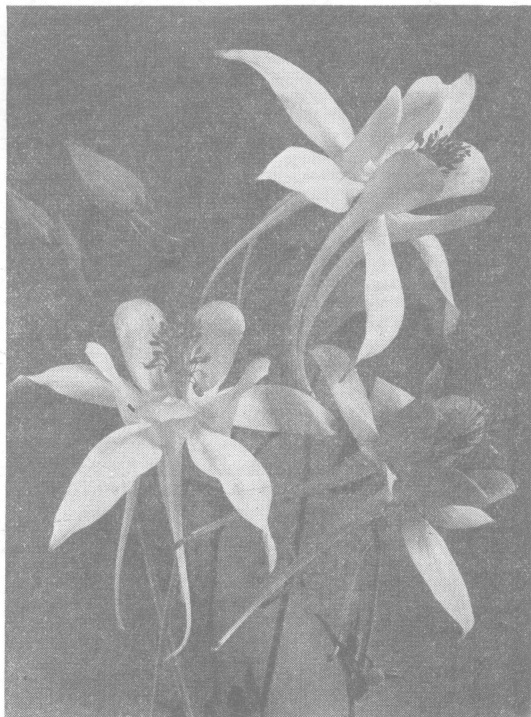


Perennial Flowers



By

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Perennial Flowers

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Anyone may have a hardy flower garden—and, despite popular belief, perennial flowers may be grown as easily as annual flowers. In fact, many of the perennial flowers which may be grown from seed are no more difficult or more expensive to grow than most annuals. Many other perennials, once a start is secured, are even easier to grow and far more permanent than any annual flowers. Therefore, if you are just starting a garden, or live in a rented house or apartment, there is no reason why you should not enjoy the beauty and the advantages of perennial flowers. After all, most perennials are easily grown if a little thought is given to the adequate preparation of the soil, including drainage (if necessary), fertilization, which is always necessary, the selection of proper varieties for the amount of sunlight available, together with ordinary care in planting and during the growing season.

Perennials should not be confused with certain hardy annuals, such as the Cornflower, the mature plants of which die in the fall, while the seedlings may live over winter or come up anew each year from self-sown seed. See Bulletin 101 "Annual Flowers." The roots of perennials live over from year to year. Some of these roots are bulbs, and will be found discussed in Bulletin 120, "Flowering Bulbs."

Perennials may be grown from seed, from the divisions of older plants, from stem cuttings, or from cuttings made from the roots. Once started, most of them live on for a number of years, if properly cared for. Some, however, such as Sweet William and Coreopsis, are most satisfactory if started anew every two or at least three years.

The possibilities offered by the use of perennials in the flower beds are unlimited, for there are many different kinds—some low, some tall, of all different habits of growth, of all colors of the rainbow, of different times of bloom, and different types of foliage. These many kinds may be combined in various ways to secure different effects, suited to each individual's taste. Carefully and properly chosen, they will give a succession of bloom from early spring until late fall.

WAYS OF USING PERENNIALS

In Borders.—The perennial border, often called the mixed flower border, is one of the most desirable methods of using perennials. With a background of hedge, a shrub border, vine-covered trellis, fence or wall, they are set off to advantage. A side of a garage or house, softened by vines, may serve equally well as a background for flowers.

Although space often limits the width of a border, at least 3 feet is essential for even short borders; with longer borders of say 20 feet or more, a width of 5 or 6 feet may be used effectively. All borders should be located to receive at least a half day of sunlight, and preferably more. A lesser amount of sun requires the use of special shade tolerant varieties, as listed on pages 4 and 5. The actual arrangement of the plants in the border will be discussed later.

In Shrub Borders.—The shrub border offers an excellent setting for small groupings of perennials, especially where space does not permit a wider border planting. These groupings may be a single kind, or of several kinds. A group

of Coreopsis, a few Foxgloves with Sweet Williams in front of them, a clump of Hardy Asters or Hollyhocks are suitable among or in front of the shrubs. Taller perennials, such as the Plumepoppy and the hardy Sunflower, may be used in back of the lower growing shrubs to give a touch of bloom at a time when the shrubs are not in flower. There are unlimited possibilities in the average garden for this type of planting. Do not forget, however, that the roots of the shrubs will compete with the flowers for moisture and nutrients.

In Nooks and Corners.—Did you ever consider the many nooks and corners, such as the base of a tree trunk, base of steps, base of bird bath, or beneath a large shrub, where a planting of flowers might improve the appearance? Depending on the situation, you may use a low-growing ground cover plant such as Sweet Woodruff or Ajuga, or a taller blooming plant such as Coralbell or hardy Verbena, or even such a plant as Gaillardia or Coreopsis. In looking over your garden, you will be surprised at the number of spots that may be planted after the necessary soil preparation and application of fertilizer. Care must be taken to use only those flowers that will endure difficult growing conditions.

NATURALIZING PERENNIAL FLOWERS

Although all yards do not offer the possibility, some are ideal for the naturalization of perennials. A back corner, a spot back of the garage or under some trees, may be planted with the more vigorous flowers. Here we may use Joe-pye-weed, Bergamot, Cardinalflower, and many others, using them as they would grow naturally.

List No. 1—Perennials for Naturalizing

Aster	False-dragonhead	Periwinkle
Bellflower	Geranium	Plumepoppy
Bergamot	Goldenrod	Snakeroot
Butterflyweed	Japanese Spurge	Sunflower
Coneflower	Lily-of-the-valley	Sweet Rocket
Coreopsis	Loosestrife	Turtlehead
Daylily	Mistflower	Virginia Bluebell

PERENNIALS AS A BACKGROUND FOR POOLS AND PONDS

The lily pool offers the chance to use hardy flowers, but often requires the presence of an adequate setting and background. Here we may find use for Iris and possibly other plants which, because of their association with moist places, tend to give the impression that the pool is located in a naturally wet spot.

There is also need for many of the lower growing types of flowers to hide and obscure the margin of an informal pool, or to decorate the coping of the formal type.

List No. 2—Perennials for Wet Places

Boneset	Joe-pye-weed	Marshmarigold
False-dragonhead	Lizardtail	Sneezeweed
Forget-me-not	Loosestrife	Swamp Milkweed
Japanese Iris	Rosemallow	Turtlehead

List No. 3—Perennials for Hiding Margin of Pool

Carpathian Harebell	Hardy Candytuft	Periwinkle
Daylily	Japanese Spurge (shade)	Rockcress
Dwarf Speedwell	Lungwort	Sedum
Grass Pink	Moss Pink	Snow-in-summer

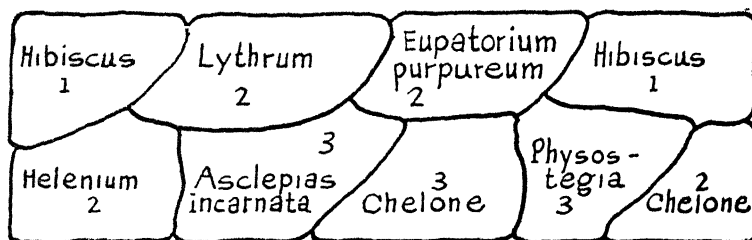


Fig. 1—Perennial bed, 8 by 10 feet, for low or wet ground. (Figures indicate the number of plants of each variety)

PERENNIALS FOR GROUND COVERS

Ground cover plants are often needed beneath trees and shrubs where it is difficult to grow grass, also in certain other spots such as banks and terraces, and between newly planted evergreens. Here we may use low growing perennials or even some of the taller ones (see lists Nos. 4 and 5).

List No. 4—Ground Cover Plants for Shade

Bugle (sun or shade)	Sedum ternatum (sun or shade)
Lily-of-the-valley (sun or shade)	Sweet Woodruff
Japanese Spurge	Veronica rupestris (sun or shade)
Viola canadense	Wild violets
Periwinkle (sun or shade)	

List No. 5—Ground Cover Plants for Sun

(Also see List No. 4)

Alyssum	Nepeta mussini	Sedum sexangulare
Creeping Buttercup	Rockcress	Sedum spurium
Callirhoe	Sedum acre	Snow-in-summer
Maiden Pink	Sedum album	Veronica rupestre
Moss Pink		Thyme

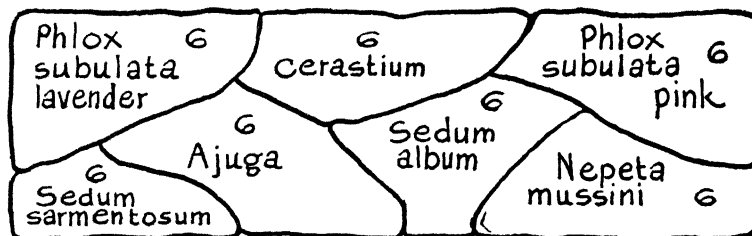


Fig. 2.—Bed of low growing perennials, 4 by 10 feet, used as a ground cover.

PERENNIALS AS A COVERING FOR BANKS AND TERRACES

Banks and terraces often are difficult to keep attractively covered with sod. They may be beautified satisfactorily by the use of trailing perennials such as those suggested for ground covers (see lists Nos. 4 and 5).

IN ROCK GARDENS

Since space prohibits complete instructions on the placing and making of a rock garden, we suggest that the beginner read at least one good book on rock gardens before attempting to make one. A rock garden can be a thing of beauty, but in every community one sees poorly planted ones.

For the beginner, any low growing perennial plants may be used, leaving out the "invaders" such as Moneywort and Sedum sarmentosum.

For the truly interested rock gardener we recommend list No. 6.

List No. 6—Good Rock Plants Often Overlooked

Aubrieta	Dianthus caesius	Sedum sieboldi
Aethionema	Dianthus neglectus	Sedum dasphyllum
Armeria maritima	Dicentra eximea	Sempervivum arachnoides
Campanula garganica	Edriaianthus	Silene alpestris
Campanula muralis	Geranium lancastricense	Silene schafta
Campanula poschsharskyana	Heuchera	Tunica
Dianthus arvernense	Iris pumila	Veronica rupestris
	Rosa rouletti	

FLOWERS FOR EVERGREEN PLANTINGS

The ground between newly planted evergreens calls for some sort of covering. The most commonly used plants for this purpose are Japanese Spurge and Periwinkle, both of which are evergreen. Other evergreen forms are the Yucca, Candytuft, and Clove Pinks. If the soil is acid, we may also use Partridgeberry and Wintergreen, if in the shade.

Other plants which are not evergreen but very satisfactory are: Moss Pink, Creeping Speedwell, Rockcress, Dwarf Iris, Primrose, Bugle, and Stonecrop.

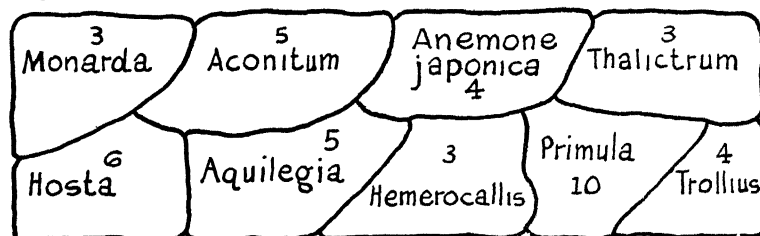


Fig. 3—Used 3 by 10 feet, for beautifying shady places

PERENNIALS FOR SHADY PLACES

Shady spots are an unnecessary worry to the home gardener. Prepare the soil by fertilizing with a complete chemical fertilizer, such as 4-12-4 or 4-12-8, at the rate of 3 pounds per 100 square feet. The incorporation of additional humus in the form of peat moss, decomposed leaves, or rotted manure will be beneficial.

Select any plants from the following list. Water well if possible during the first summer.

List No. 7—Perennials Preferring or Tolerant of Shade

Bergamot	Globeflower	Pink Turtlehead
Bleedingheart	Goatsbeard	Plantainlily
Bugle	Japanese Anemone	Polemonium
Cardinal Flower	Joe-pye-weed	Primrose
Columbine	Lily-of-the-valley	Pulmonaria
Coralbell	Lenten Rose	Solomonseal
Forget-me-not	Loosestrife	Sweet Woodruff
Foxglove	Meadowrue	Trillium
Gasplant	Monkshood	Virginia Bluebell
	Moss Pink	

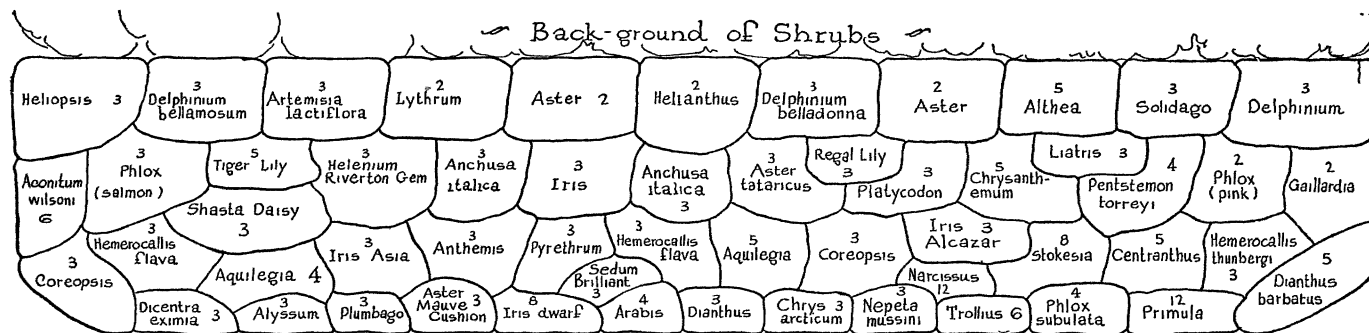


Fig. 4—Bed 35 by 7 feet. A variety of perennials planned to give a continuous effect throughout the season. Any of the plants may be changed for others blooming at the same time, according to individual taste. (Figures in plan indicate the number of plants to use.)

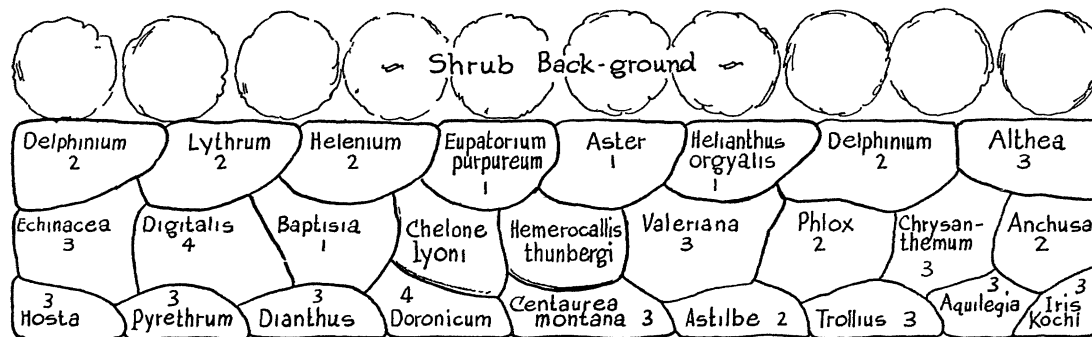


Fig. 5—A convenient bed 5 by 20 feet, size suitable for a border in the average small yard. A relatively long period of bloom will be obtained from this plan. (Figures indicate number of plants to use.)

PERENNIALS FOR STONE WALLS

Stone walls, where the *stones have not been set in cement or mortar*, offer a wonderful place for low growing hardy plants which make the wall more interesting. A wall of either flat stones or boulders may often be used to advantage in place of a grass terrace. Such a wall is especially desirable for places where grass terraces are difficult to keep in good condition. The stones should be set with a very thin layer of soil between them.

The flat stones should slope inward to catch and conserve the rainfall. The face of any loose stone wall should slope backward at the rate of 1 to 2 inches for each foot of height. This helps to maintain the wall and prevent it falling forward under the action of frost and rain. Any of the plants in list No. 8 may be used.

List No. 8—Perennials For Wall Planting

Aquilegia flabellata nana	Hens and Chickens	Saponaria ocymoides
Cheddar Pink	Hardy Alyssum	Saxifrage (Strawberry Begonia)
Campanula garganica	Hardy Candytuft	Sedums
Clove Pink	Moss Pink	Tunica
Dwarf Speedwells	Rockcress	Woolly Thyme

PLANTS FOR SPECIAL GARDENS

There may come a day when we become so interested in some one flower, as the Iris, Peony, Phlox, or Delphinium, that we desire to devote our entire garden to it. Although this type of garden is glorious when it is in bloom, it is usually less interesting for the remainder of the season than those with a variety of flowers. A few suggested groups of plants worthy of specialization are: Campanula, Dianthus, Primula, Aster, Hemerocallis, and Sedum.

List No. 9—Perennials Requiring Well Drained Situations

Alyssum	Gaillardia	Peony
Aubrieta	German Iris	Pink
Coreopsis	Larkspur	Rockcress
Foxglove		Thrift

PLANTS FOR THE CUTTING GARDEN

For those who prefer to leave the blooms uncut in the borders, a cutting garden is highly desirable. In this garden will be grown those annual and perennial flowers best adapted for cut flowers. Set the plants in rows in a deeply spaded well fertilized location.

List No. 10—Perennials for Cut Flowers

Aster	Delphinium	Peony
Babysbreath	False-Dragonhead	Pinks
Chrysanthemum	Gaillardia	Poppy
Coneflower	Iris	Shasta Daisy
Cornflower	Japanese Anemone	Sneezeweed
Coreopsis	Painted Daisy	Stokes Aster
Daylily		Torchlily

List No. 11—Fragrant Flowers

Lemon Daylily	Pinks	Tufted Pansy
Lily-of-the-valley		Valerian

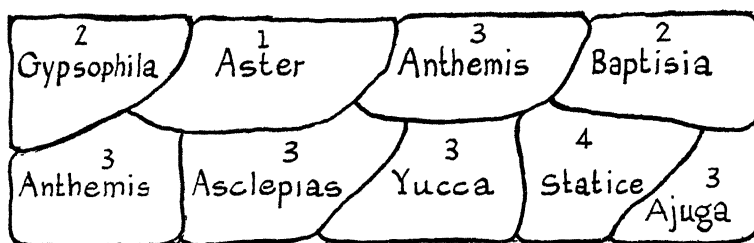


Fig. 6—Bed of perennials, 8 by 10 feet, which will grow in dry locations.

List No. 12—Background Perennials

Delphinium	Rosemallow	Sunflowers
Hollyhock	New England Aster	Tall Goldenrod
Joe-pye-weed	Plumepoppy	Tatarian Aster

List No. 13—Perennials for Dry Places

Achillea	Butterflyweed	Daylily
Aster	Coneflower	Globethistle
Babysbreath	Coreopsis	Thrift
Bugle	Camomile	Yucca

List No. 14—Perennials With Long Season of Bloom

Although no one perennial will bloom all season, the following will give flowers for a considerable period of time.

Anthemis	Chrysanthemum Pink cushion	Gaillardia
Coralbell	Dicentra eximea	Shasta Daisy
Coreopsis		Stokes Aster

Propagation of Perennials

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A KNOWLEDGE of the various methods used in propagating perennials will be helpful to those whose desire for these plants exceeds their ability to purchase them. Also there are many who study the various methods of propagating hardy plants because of the enjoyment they derive from it. Despite the experience of some who have been careless in their efforts to propagate perennials, it is relatively easy to grow them from seed, by dividing plants, and even from cuttings.

STARTING THE SEED IN COLD FRAMES AND HOTBEDS

A coldframe is practically indispensable to the home gardener growing his own plants. Once used and its advantages appreciated, it will always be used. Coldframes are simple and inexpensive to make, and easy to operate. They will soon pay for themselves in the saving of seedlings and plants, to say nothing of the many varieties which can be grown that otherwise would be difficult to raise.

A coldframe consists of a wooden frame set on top of the ground, made preferably of a rot resisting wood such as cypress or redwood. One-inch boards are sufficiently heavy, although heavier may be used. Depending on the use to which it is to be put, the front should be 6 to 10 inches high, with the back

enough higher to allow water to drain off the sash. The frame should be well made, to prevent cold air entering if used in early spring. If standard coldframe sash are used, the frame will be 6 feet wide and in units of 3 feet long. But these sash are heavy, and, if more than one is used, difficult to reach across the bed. The smaller sash, 4 feet long and 3 feet wide, is much more satisfactory for home use. An old window sash, with a frame made to fit, will prove satisfactory. In addition to the glass sash a shade made of lath will prove indispensable during the summer.

If earlier seedlings are desired, they may be started by using a hotbed. The old-fashioned method was a pit 2 feet deep filled with fresh horse manure, the heat of decomposition supplying heat for the hotbed. Even for farm use this method is troublesome, and in town, expensive. The modern hotbed is electrically heated by lead-covered cables or electric light bulbs.

GROWING PERENNIALS FROM SEED

The average perennial is as easily grown from seed as are annual flowers, if we but take a few precautions. A well prepared, weed-free seedbed is essential. Although the seed may be sown in the garden, it is preferable to sow it in a prepared seedbed—in a coldframe if possible. The seedbed need not be soil, in fact other materials are often better. Sphagnum moss, sand and peat, or garden grade vermiculite may be used.

Equal parts sand and peat moss in a 2-inch layer on top of good garden soil is an excellent seedbed, or seeds may be sown on top of a half-inch layer of vermiculite or finely screened sphagnum moss. Cover seeds with $\frac{1}{8}$ -inch

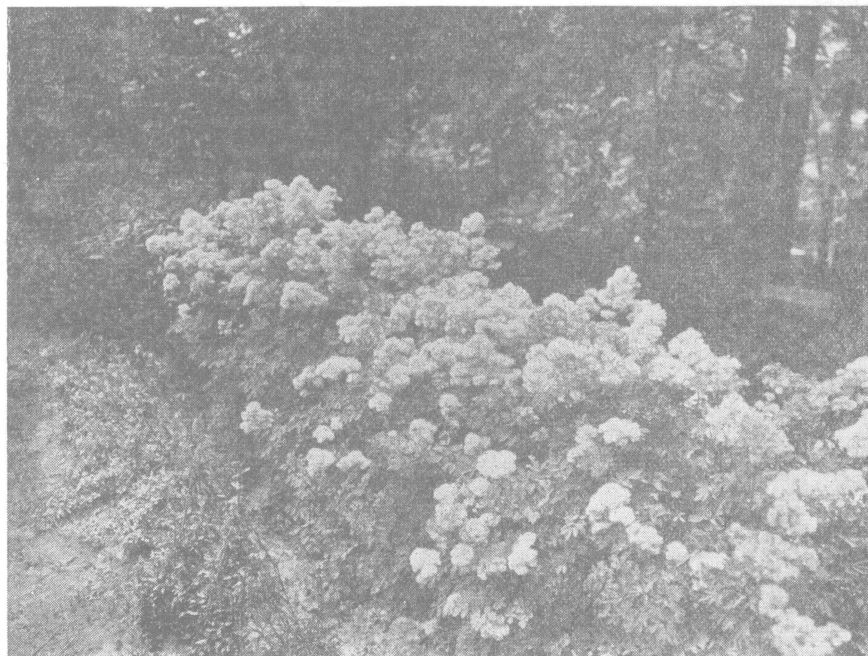


Fig. 7.—The Meadow Rue (*Thalictrum*) is excellent for either sun or shade. Its foliage is ideal for using in flower arrangements.

layer of sand, peat, or vermiculite. These materials do away with necessity of sterilizing seedbed for disease and weed seed control.

Seed Treatment.—Although the chemical treatment of seed has been done for years, a recently recommended method has proven more satisfactory than the older methods. Place a small amount of spergon in each seed packet (the equivalent of a grain of rice for average perennial packet), and shake enough to dust each seed. No surplus should be planted with the seeds. This will protect seedlings as they germinate. This however is seldom necessary unless seeds are sown in soil.

When to Sow Seed.—Seeds may be spring sown out of doors from March until June, but preferably in March or April to get an early start. Early sown seed may be hastened by the use of a coldframe with glass sash. Seeds may also be sown in late July or early August for bloom next year, in which case a lath or cloth shade should be placed across top of coldframe, 8 to 12 inches above seedbed. Seeds may also be sown in a coldframe in late November for spring germination.

Seedlings from spring sowings may be transplanted in late spring to a separate bed to grow. Seedlings from July sowings are usually best left in the seedbed until the following spring, although they may be transplanted to coldframes in early fall.

Some seed must be fall sown to allow a period of temperature below 41°F. before they will germinate. This includes Dictamnus, Trollius, Anemone, Ranunculus, Helleborus, Peony, Tulip, Narcissus, Phlox, Epimedium, Crocus, Dicentra, and Meconopsis besides many of the alpine plants. Delphinium and Primrose will usually germinate better if sown as soon as seed is ripe.

Sowing Suggestions.—Seed may be sown in rows or broadcast. Row sowing is preferable in flats, coldframes, and in the open ground. Broadcast sowing is sometimes used for slow germinating varieties. Sow separately in small flats or pots. If seed is sown in rows, allow about 2 inches between rows. If broadcast, sow thin enough to give an air space between seedlings.

The practice of covering the soil with burlap or paper is dangerous and unnecessary if a proper seedbed soil is used, together with a light shade of lath or muslin during hot weather.

Labeling.—Don't trust your memory. It always fails. Label everything. Use wax pencil on painted wooden pot labels. These will last one season. Permanent labels may be made from sheet zinc $\frac{1}{4}$ by 3 inches. Write with chemical ink made of $\frac{1}{2}$ -ounce of muriatic acid and $\frac{1}{2}$ -ounce butter of antimony.

Care of the Seedlings.—The seedlings must never be allowed to dry out, yet the seedbed should not be kept so wet that it interferes with the best growth of the plant. When they are transplanted, usually with the appearance of the third pair of leaves, they should be put by themselves in well prepared and drained beds where they do not have to compete with old established plants. Some people prefer to grow them in a coldframe, planting them about 4 to 6 inches apart each way.

Water well after planting and shade with paper, flower pots, or lath shade if weather is hot or sunny.

Some shade-demanding perennials may be easily grown under lath or muslin shades during the entire summer.

DIVIDING PERENNIALS

Most perennials, with the exception of those with a long taproot, are easily propagated by the division of the established clumps. This is usually done every two or three years when the plants normally require shifting. There are some plants, like Babysbreath, Peony, Bleedingheart, Lupine, Gasplant, Eremurus, and Milkweed, which should be left undisturbed. On the other hand, Chrysanthemums should be divided every spring. Shasta Daisy, Aster, Bergamot, and similar varieties, do best if divided every two years. Iris usually require division every third year.

When dividing perennials, the parent clumps should be cut or broken into as many parts as desired. The need for division and resetting will usually be determined by the lack of vigor and the smaller size of flowers. Late summer and fall blooming perennials should be divided in the spring, and spring blooming ones in August, or sometimes just after they have bloomed in the spring. Iris are usually divided in July and Peonies in September. Oriental poppies are planted or divided in August when they are dormant.

PROPAGATION FROM CUTTINGS

Many perennials may be grown from stem cuttings by the home gardener.

During June and July, cuttings are made from the tips of the stems. Depending on the variety and size of stem, they will be from 1 inch to 2 inches in length. Cut with a sharp knife, remove the lower leaves, and insert $\frac{1}{2}$ to 1 inch in a slit in the cutting bed.

This bed should consist of a small coldframe filled with 3 to 4 inches of clean sharp sand, vermiculite, or a mixture of equal parts sand and peat moss.

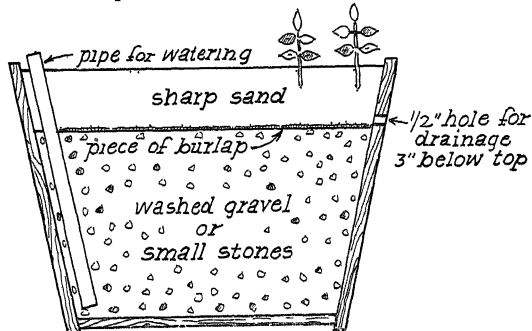


Fig. 8.—Tubs or pails may be used for propagating beds.

A glass sash may be kept over the frame until the cuttings are rooted. Keep cuttings shaded with a lath shade if frame is not located in the shade.

Regular daily watering is essential for the successful rooting of cuttings. This may be more or less automatically cared for by use of a tub or pail with a constant

supply of water kept about 2 inches below the surface (see Fig. 8).

A great variety of cuttings of perennials, shrubs, and house plants may be rooted by this methods. If plants are in a coldframe, water two or three times a week.

Keep the cuttings shaded during the heat of the day, or better still, place in the shade of a tree or on the north side of building.

As soon as the cuttings have developed roots $\frac{1}{4}$ to $\frac{1}{2}$ inch in length (this will take from 10 days to 3 weeks), they should be transplanted into a growing bed the same as seedlings or potted in 2- to 2½-inch pots and plunged in soil or sand in a coldframe. Shade with lath until established.

List No. 15—Perennials which May be Propagated by Stem Cuttings

Arabis	Dianthus	Phlox
Aubrieta	Gaillardia	Plumbago
Campanula	Helenium	Salvia
Cerastium	Heuchera	Saponaria
Chrysanthemum	Iberis	Sedum
Delphinium	Monarda	Veronica
	Penstemon	

ROOT CUTTINGS

Some perennials may be grown from root cuttings. The roots may be cut into 1-inch lengths during October and November and buried beneath an inch or two of sand in the coldframe. The frame should be filled with leaves during the winter.

These cuttings, when planted in the little nursery bed in March, will be found to have developed roots and stem buds and will produce flowers exactly like the parent stock. They should never be allowed to dry out during the winter or during planting.

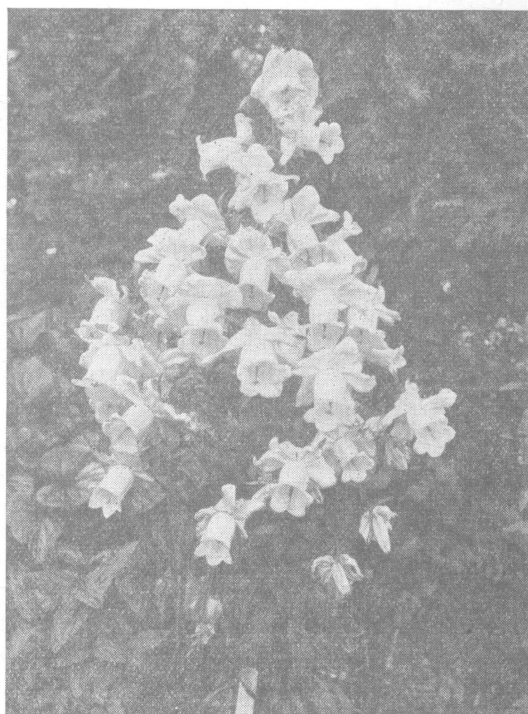


Fig. 9.—The *Campanula medium calycanthema* has a saucer-like effect on each flower which the plain Canterbury-bells do not have.

Perennials propagated by root cuttings

Anchusa (Bugloss)	Oenothera (Evening-primrose)
Anemone	Papaver (Poppy)
Asclepias (Butterflyweed)	Phlox
Bocconia (Plumepoppy)	Polygonatum (Solomon's Seal)
Ceratostigma (Plumbago)	Stokesia (Stokes-aster)
Coronilla varia (Crownvetch)	Thermopsis
Dicentra spectabilis (Bleedingheart)	Trollius (Globeflower)
Echinops (Globethistle)	Yucca (Adam's-needle)
Gypsophila paniculata (Babysbreath)	

Preparation of Perennial Borders

THE NEED of proper preparation of the soil before planting cannot be over-emphasized. Even when the top soil is naturally deep and mellow, the incorporation of humus in the form of peat moss, well rotted leaves, rotted manure, or well decayed compost to a depth of 10 to 12 inches will prove beneficial. For poor soils such as exist in the average garden, especially if they are subsoil from the cellar excavation, the above treatment is absolutely essential. The same application of humus should be made on all heavy clay soils to improve their condition.

A 3- or 4-inch layer of humus can well be applied to clay soils, spading it over several times to a depth of 10 inches to thoroughly incorporate this organic matter with the soil. If the bed be prepared several months before using, fresh barnyard manure may be used. Clay soils may also be improved by the addition of coal ashes. As much as 3 to 4 inches of ashes, sifted through a $\frac{1}{2}$ -inch screen, will be found advantageous. If soft coal ashes are used, at least one heavy rain should fall before planting in the soil. Humus of some sort should always be added with the coal ashes.

If the soil is highly acid as indicated by testing (your County Agricultural Agent will do this for you) the application of lime as recommended on the basis of your test will prove beneficial. This is especially true for delphiniums.

Unless considerable quantities of barnyard manure have been used in the preparation of the soil, a complete fertilizer should be mixed through the soil. A 4-12-8, 5-10-5 or similar analysis at the rate of 3 to 4 pounds per 100 square feet each year usually prove ample. This amount may be divided and applied in April, again in June, and in September. These applications can be made on the surface of the soil and watered or cultivated in.

If the site of the flower border is poorly drained, it would be advisable to put in a line of 4-inch drain tile to carry the water away to a lower spot. This will soon pay for itself in plants saved from winter killing.

The greater the effort spent in the preparation of the flower border the more satisfactory will be the returns from it. A well prepared perennial border will last for a number of years, whereas a poorly prepared border will need constant renewal of plants.

The old-fashioned method of digging out each border to a depth of 2 feet and filling in with alternate layers of soil, compost, and manure, had much to recommend it for those who are willing to go to the effort and expense.

List No. 16—Less Common Perennials Worth Growing

Aconitum	Dictamnus	Penstemon
Anemone	Digitalis ambigua	Primula
Astilbe	Helenium	Salvia
Campanula	Helianthus	Saxifraga
Centranthus	Hemerocallis	Stokesia
Chrysanthemum arcticum	Liatris	Thalictrum
Dicentra eximia	Lychnis	Veronica
	Papaver	

Arrangements of Plants in Borders and Beds

THE ARRANGEMENT of the various flowers in any bed or border is important. First, we must decide which ones we want to grow, second, the arrangement of these, and third the quantity of each.

The beginner should grow only the hardier varieties until their culture is mastered, after which the more difficult ones may be tried. The general tendency is to grow so many kinds that no one variety stands out.

A possible basis for the determination of the size of any one group is to have it large enough to be easily seen and recognized when in bloom, from that part of the yard from which the border is usually observed.

The height must be known so that the taller ones do not obscure the lower ones. The extremely vigorous varieties, such as Aster, Physostegia, and Achillea, among others, should not be placed too close to more refined growers such as Platycodon, Lupinus, and Primula.

Some people plan their borders in groups of interesting combinations, such as Delphinium and Madonna Lillies, or Foxgloves and Sweet William. This scheme works out very nicely once you have chosen your groups, but you must know the flowers before this is possible.

Other gardeners plan rather definite color schemes, even trying to follow out the idea of the colors in the rainbow.

One simple but practical method of planning the border is to plan on spots or groups of color for each month of the growing season, making a plan for March bloom, for April bloom, and so on through September. Or possibly you may go away for the summer and wish only for the spring through June, and again in September. July and August blooming plants are, therefore, left



Fig. 10.—The Canterbury Bell is the most showy of all the Campanulas. Massed in a border, the effect is very pleasing.

out entirely. In the same way a summer home or cottage garden should have only June, July, and August blooming varieties. The whole problem of color in the flower border is unusually well discussed in a book "Color Succession in the Border" by Stuart Ortloff.

Much has been written, and even more has been said, about color in the garden, so that we often find people who are hesitant about planting a flower border because of the fear of clashing colors. Actually, with relatively few exception, such as some Oriental Poppies and some Roses, there are very few unpleasant color combinations likely to appear in our gardens. In a well grown garden there will always be sufficient green foliage to act as a buffer between these few inharmonious combinations. On the other hand, one will find that there are certain pleasing combinations, such as Coreopsis and Belladonna Delphinium, which may be planned and developed. But here again seasonal variation steps in and the best planned combinations sometimes fail to bloom together.

Often chance combinations in unstudied borders give charming results, so no one should hesitate to plan a flower garden because of lack of knowledge of color harmony; as a final solace, remember that any plant can be moved even when it is in full bloom, provided adequate soil is taken with it.

For early spring effects, it is desirable to use spring flowering bulbs among the perennials. Squills, Crocus, Grape Hyacinth, Narcissus, and Tulips are but a few of the possibilities. See Bulletin 120, "Flowering Bulbs."

For midsummer bloom, when most perennial gardens are bleak and bare, annual flowers will brighten the effect of vacant places.

Some gardeners prefer to keep the various colors separate. This is done by having an entire bed, even an entire garden of flowers of one color, such as blue or yellow. The following lists will be of help in planning such a garden.

List No. 17—A Blue Garden

Bellflower	Greek Valerian	Plumbago
Bugloss	Larkspur	Speedwell
Centaurea	Mistflower	Virginia Bluebell
Forget-me-not	Phlox	Wild Indigo

List No. 18—A Yellow Garden

Alyssum	Daylily	Heliopsis
Buttercup	Gaillardia	Leopardbane
Camomile	Evening Primrose	Sneezeweed
Columbine	Globeflower	Stonecrop
Coreopsis	Goldenglow	Sunflower
	Goldenrod	

List No. 19—A Pink Garden

Aster	Coralbell	Swamp Milkweed
Astilbe	Phlox	Tunica
Bleedingheart	Pinks	Turtlehead
	Stonecrop	

List No. 20—Foliage Other Than Green

Betony	Nepeta	Speedwell
Fescue	Plantainlily	Stonecrop
Iris	Plumepoppy	Thyme
Lavender	Rue	Wormwood
	Snow-in-summer	

SETTING OUT THE PLANTS

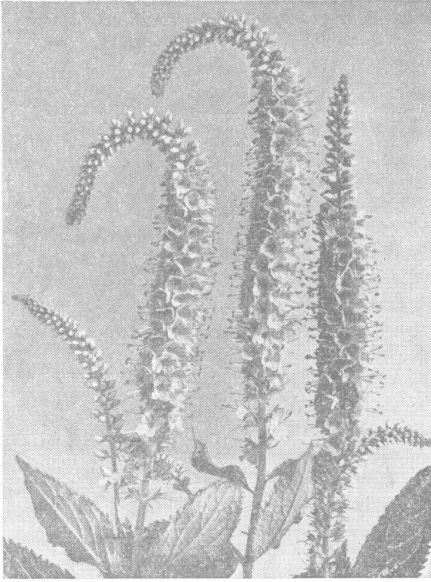


Fig. 11.—The Clump Speedwell is one of the best of the large spike roots.

In setting out the plants, whether it be in spring or fall, precautions should be taken to protect the plants. They should never be allowed to dry out, and if not planted immediately, should be heeled in individually in a shallow trench so the roots are completely covered with soil.

It may be noted from the plans on pages 4 to 8 that each kind of plant should be set at a more or less definite distance from its neighbor. This distance depends upon the habit of growth of the plant—whether it is erect or spreading, and also whether it is a rapid grower, as in the case of the hardy Asters, which quickly cover a large area.

As stated earlier, perennial planting is not indefinitely permanent, since most of the plants will benefit by being dug, divided, and replanted after two or three years. The more

care and attention given to proper weeding and fertilizing, and replanting the perennials, the better will be the results.

ADEQUATE BACKGROUNDS ESSENTIAL

Beautiful flowers, even if well grown and nicely arranged in borders or beds, do not give the desired effect unless they are properly placed in the garden. Before we arrange the flowers themselves it is necessary to consider the background, or the setting. There is no question but that most plantings of flowers would be set off to better advantage if given an adequate background of shrubs, vines, or evergreens. Although many of us hesitate to use the necessary space in a small yard to furnish such a setting, it would add greatly to the effect. This background may be supplied as a vine covered fence, as a rose covered lattice, as a hedge of privet or other suitable shrubs, or as mixed planting of various ornamental shrubs.

Sufficient room should be left between the flowers and the hedge to prevent too much competition. It is possible to put in a sheet of galvanized iron to prevent shrub and tree roots from entering the bed and stealing food and moisture.

PLANTING FOR SUCCESSION OF BLOOM

Ideally, every flower bed should have a succession of bloom from early spring until late fall, but this cannot be done in a small space. We may, how-



Fig. 12.—The "Jersey Gem," a popular variety of Tufted Pansy. The flowers make a dainty edging for rock gardens.

ever, have continuity bloom in our garden by having it in one spot or another.

In planting a border it is usually best to start with the fall months and work backwards, otherwise one is apt to have the entire bed filled up with too many low, spring blooming plants, many of which have poor foliage after blossoming.

Nor is it best to have all the possible kinds of bloom at any one time, unless the border be of enormous size. One must choose the varieties that do best in the garden. There should also be enough of each variety to make an adequate showing. The greater the distance from which a border is viewed, the larger must be the individual groups of any one kind.

Care of the Garden

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Although artificial watering is not essential, it is highly desirable, for the perennial border should never be allowed to dry out so that the plants show indications of wilting or drying, especially during the first year. When watering, enough should be applied to soak down into the soil to a depth of 4 or 5 inches. This will usually carry the plants through for a week without additional watering. To saturate the soil thoroughly, a mechanical sprinkler of some sort is advisable. It will require from one to three hours to water any one area to a satisfactory depth, depending upon the area covered and the amount of water delivered.

SUMMER CARE

Cultivation.—Although practiced by many, cultivation can be largely done away with by the use of a summer mulch or layer of organic material, such as chopped corncobs, peat moss, cottonseed hulls, rotted manure, grass clippings, buckwheat hulls, clover or alfalfa chaff, or even spent hops from a brewery. A 1- or 2-inch layer will serve both for keeping down weeds, conserving soil moisture, absorbing rainfall, and maintaining a lower soil temperature during hot weather. As most mulch materials are very dry when obtained, considerable watering and mixing may be necessary to prevent mulch shedding rainfall.

Staking.—Staking will often be necessary for taller growing perennials such as Delphiniums and for sprawly ones such as Peonies and Gaillardia. All staking should be as neat and inconspicuous as possible, maintaining at all times the natural effect of the plant.

Removal of old flowers, unless seed is desired, is generally advisable both from the standpoint of appearance and, in case of Coreopsis and Gaillardia, to maintain succession of bloom.

WINTER PROTECTION

Winter protection of hardy perennials usually consists of proper drainage to prevent decay, and adequate mulching to cut down the alternate freezing and thawing of the soil. For some plants, this protection is supplied best by a mulch of straw or manure, placed over the entire bed during early December after the ground has started to freeze. This method works with most plants. However, plants that have a mass of leaves remaining above ground over winter, such as the Hollyhocks, Foxgloves, Canterbury Bells and Sweet Williams, will often suffer from this treatment. A light covering of peat moss over the soil, but not over the leaves, is more satisfactory.

Shading, consisting of a lath frame or a mulch of straw or cornstalks, held above the plants, is equally effective. Foxgloves and Canterbury Bells may often be wintered most successfully by digging in November and storing in a shaded coldframe until April.

Leaves may be placed on the perennial borders in the fall, provided they are of the varieties that do not mat down. Poplar and maple leaves usually form a solid dense mat, and do more harm than good. Oak leaves, on the other hand, seldom mat together and make an excellent winter protection. Snow would be better than any other covering if we could but have a steady supply of it during the winter. Excelsior, cornstalks, cattails and evergreen branches (excess Christmas trees are inexpensive) are equally effective.

The Control of Insects and Diseases

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*A*LTHOUGH THE CONTROL of flower garden pests is usually easy many gardeners fail to secure results because they will not follow instructions. Since no one material is a cure-all it is absolutely necessary to understand what you are trying to control. A control for aphids will not control a disease, nor will a fungicide for disease control or kill aphids. Likewise, a poison for caterpillars will not injure aphids in any way. So why use the wrong kind of spray or dust? It is just a waste of time and material.

Detailed instructions on the control of garden insects and diseases will be found in Bulletin 76, Agricultural Extension Service, Ohio State University. For your convenience, we are listing a few of the more common pests.

INSECT PESTS

Many of the more troublesome pests are discussed under each individual flower; but a few of the more general ones most likely to be found are given below:

Plant Lice or Aphids.—These small insects will be found on many perennials. They may be green, black, or red, but all are controlled in the same way,

although some are more difficult than others. Spray with Black Leaf 40 or a rotenone pyrethrum spray. Be sure to add a soap spreader if instructions on container specify one. Aphids may also be controlled by dusting with nicotine dust (not tobacco dust), or rotenone dust. Several applications must be made at intervals of 4 to 7 days to effectively control them. Every individual aphid must be contacted with spray or dust to kill it.

Cutworms.—These insects make their presence known by cutting off the plants near the surface of the ground. Poison bran bait scattered on the ground in the evening will be effective. Thoroughly mix 1 quart of bran and $\frac{1}{2}$ teaspoon of Paris green, then add 2 tablespoons of molasses or brown sugar and $1\frac{1}{2}$ cups of water. This should be just enough to dampen the mixture. Apply 1 pound to 1000 square feet.

Root Lice.—These are white or bluish-green lice found on the roots. Their presence is indicated by weakened growth and yellowish foliage. Dig away a small amount of soil at base of plant to form a cup, and pour in from $\frac{1}{2}$ to 1 cup of nicotine spray solution. Corrosive sublimate may be used in the same manner, using 1 tablet to 1 quart of water.

Red Spider.—A minute pest, barely visible to the eye, found on the foliage of many plants during hot, dry weather—usually on the undersides of leaves. Especially serious to Phlox and Primula, and Chrysanthemums, but also injurious to many perennials. Although many materials are said to control red spider, sulfur will be found most practical under average conditions. If you have a dust gun buy “dusting sulfur” which will be 300-mesh or finer. Powdered sulfur and flowers of sulfur are entirely too coarse. If you have a sprayer, use “wetttable sulfur,” which is prepared so it will mix with water. Whether you spray or dust, apply the sulfur to the under surface of the leaves. *Do not* apply DDT as it kills parasites of red spider, so you will have a worse infestation than before.

Stalk Borers.—Striped caterpillars burrow in the stems of many garden flowers. A clean-up program of all weeds, old stems, and rubbish to prevent their occurrence is the best control. Once they are in the plant they may be speared with a wire or the stem cut off and burned.

Grasshoppers.—These insects sometimes cause trouble. They are controlled the same as cutworms, except that the bait is spread in the morning.

Garden Slugs (shell-less snails).—Slugs are especially destructive to seedlings; but in shaded gardens they attack Primulas, Plaintainlilies, and other perennials. Dust or spray with DDT. If the infestation is severe, several applications will be necessary. A poison bran bait containing metaldehyde scattered around the garden in the evening is another method control.

DISEASES OF PERENNIALS

Diseases of perennial flowers, most likely to be encountered in the average border or bed, are as follows:

Rust.—This is indicated by orange or brown spots on foliage. At the first indication, dust with sulfur dust or spray with a complete garden mixture containing Fermate. The first appearance of rust is usually in late spring or early summer.

Mildew.—A white powdery or downy material on foliage. Controlled by use of sulfur dust or spray (see red spider) which is best applied as a preventative before mildew starts.

List of Perennial Flowers

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Achillea. Yarrow.

There are several interesting forms of this plant. All are hardy, vigorous, and easily grown from seed. Being vigorous, clumps need dividing often.

A. ptarmica, Sneezewort, variety Boule de Neige. Height, 1½ feet; white, blooms June to August.

A. tomentosa, the Woolly Yarrow. Height, 6 to 8 inches; yellow; July to September. Is a good rock garden or border plant.

A. filipendulina, Fernleaf Yarrow. Height, 3 feet; June to July. Resembles Tansy.

Aconitum. Monkshood.

Usually does best in partial shade. Is easily divided, but difficult from seed. Leave undisturbed once planted. Prefers rich, moist soil. Roots poisonous if eaten.

A. fischeri, dwarf, blue, September and October, and *A. wilsoni*, tall, September and October, give profuse bloom.

A. napellus and Sparks variety are summer blooming.

Adams Needle. See Yucca.

Althaea rosea. Hollyhock.

Being in good social standing the Hollyhock may be used in the garden, along fences, beside the garage, or among the shrubs. There are double forms. Hollyhock rust may be controlled by spraying or dusting with sulfur or fermate at its first appearance.

Alyssum. Alyssum. Height, 8 to 12 inches; May and June.

Alyssum is difficult to transplant unless dormant or with a ball of earth attached. Usually lasts but a few years but is worth the effort of growing it. Prefers a well drained soil. Try it in a rock wall.

A. saxatile compactum, the Goldentuft, is the most showy. *A. argenteum* has good foliage.

Anchusa. Bugloss.

Brilliant gorgeous blues. *A. myosotidiflora*, the Forget-me-not Anchusa, is especially good for shade. Height, 12 inches; blooms in April or early May.

Azurea (italica). Height 3 to 4 feet; June; has the varieties Opal and Dropmore, rather coarse, requiring staking. Cutting back old flower stalks will often give September bloom. Poor drainage causes plants to rot, but new plants often come up from remaining roots. This usually happens when they are transplanted. Grown from seed, division, or root cuttings.

Anemone. Anemone.

Prefers a moist, well drained soil, sun or shade. A winter mulch necessary the first year.

A. pulsatilla, the Pasqueflower; 8 to 12 inches; purple flowers, feathery seed pods, blooms in April.

A. japonica, 2 to 3 feet in height; comes in white, light pink, and dark pink; September to October. It has beautiful dark leathery foliage and vigorous tall flower spikes. Is excellent as a cut flower or garden flower, and although often difficult to establish, once started will hold its own for years. Grown from division in early spring. Root cuttings can be made in fall or spring. There are other good species of anemones.

Anthemis tinctoria. Yellow Camomile. Height, 18 to 25 inches; June to September.

Hardy, free blooming, daisy-like flower with effective foliage. Self sows readily.

Aquilegia. Columbine. Height, 18 to 30 inches; May and June.

Incorrectly called Honeysuckle. Exquisitely graceful plants for sun or shade. For the border, the rock garden, or the wild garden. Easily grown from seed. The long spurred hybrids are usually preferred, although they may prove to be shorter lived and less hardy than the short spurred type. A number of named varieties are available.

Arabis alpina. Rockcress (see *Aubrieta*). Height, 6 inches; white or pink; May.

Border or rock plant grown from seed, division, or cuttings. The double flowered variety is a more compact flower. *A. procurrens* is more permanent.

Armeria. Statice (Thrift). Height, 6 to 10 inches; July.

The *Armerias* are interesting plants, with compact clumps of leaves, out of which arise the slender flower stems bearing heads of rosy purple flowers. The main difference in the varieties is the size and time of bloom. Easily grown from seed or division. They may be used for the rock garden or perennial border, provided the soil is well drained, otherwise they soon die out. *A. lauchiana* appears to be the most satisfactory variety.

Artemisia. Wormwood.

Old-fashioned plants used mainly for foliage effect. Grown from division or cuttings.

A. vulgaris lactiflora, White Mugwort, 5 feet, August, is a good background plant, with very attractive cream colored flowers which blend with any other color. Often slow to become established.

A. stelleriana, Beach Wormwood or Old Woman, 8 inches, silvery green foliage, of spreading habit, is used as a ground cover.

A. Silver King, a silvery gray form, 3 feet high, is effective if not overused. May be dried for winter bouquets.

Asclepias tuberosa. Butterflyweed. Height, 18 to 24 inches; orange; July.

A gorgeous native roadside flower for well drained, sunny locations. Easy from seed. Mature plants should be left undisturbed.

A. incarnata, the Swamp Milkweed, is for wet ground or near pools.

Aster (Michaelmas Daisy).

The hardy asters, many of them natives of this country, in their many excellent horticultural varieties are used more in Europe than here. Hardy, vigorous, free blooming, easily propagated by division—these are but a few of their good qualities. One caution may be necessary; they will crowd out weaker plants unless kept in control.

In addition to such varieties as St. Egwyn, Beauty of Colwall, Climax, the following are desirable:

Aster tataricus, height 4 feet, blue, October and November, is one of the last flowers to bloom in the fall. Erect, upright growth.

A. Mauve Cushion, height 12 inches; mauve, August to September.

A. alpinus, Rock Aster, height 12 inches, blue, May and June.

A. Frikarti, height, 24 inches; blue; July and August.

Aubrieta. Aubrieta. Height, 4 to 6 inches; pink, lavender, purple; April or May.

Although slightly tender, worthy of growing in the well drained rock garden or wall, sun or partial shade. The better varieties from cuttings, others easy from seed. Once established they are best left undisturbed.

Babysbreath. See *Gypsophila*.

Balloonflower. See *Platycodon*.

Baptisia australis. Wild-Indigo. Height, 3 inches; blue; May or June.

Brilliant color, excellent foliage. Prefers full sun and can stand dry and sandy soils. Easily grown from seed or division.

Beebalm. See *Monarda*.

Bellis perennis. English Daisy. Height, 6 inches; white, pink, red; April to June.

Partial shade and plenty of moisture will help to produce bloom throughout the season. Easily grown from seed or division.

Bellflower. See *Campanula*.

Bergamot. See *Monarda*.

Blanketflower. See *Gaillardia*.

Blazing Star. See *Liatris*.

Bleedingheart. See *Dicentra*.

Bocconia. Plumepoppy. Height, 5 to 7 inches; cream color; July and August.

Extremely vigorous, apt to crowd out other perennials, best used among shrubs. Flowers and foliage extremely effective. Easily grown from seed or division.

Boltonia. Boltonia. Height, 3 to 5 inches; white, pink; August.

Resembles the hardy Asters. Vigorous, free blooming. From seed or division. Usually needs staking.

Bugloss. See *Anchusa*.

Buttercup. See *Ranunculus*.

Camomile. See *Anthemis*.

Campanula. Bellflower. The many Campanulas are well worth using.

C. persicifolia, the Peachleaf Bellflower, 2 to 3 feet, June, is extremely showy.

C. pyramidalis. The Chimney Bellflower, 4 to 6 feet, although more difficult to grow, is equally desirable. Resembles Delphinium.

C. latifolia, blue or white, 2 to 3 feet, July and August.

The Canterbury Bell, although biennial and best wintered in the coldframe, is the most showy of all. Among the low growing forms *C. carpatica* is very fine. It is easily grown from seed or division. Use *C. garganica* in rock walls.

Campion. See *Lychnis*.

Catnip. See *Nepeta*.

Centaurea. Centaurea.

Interesting sun loving plants, easily grown from seed or division.

C. montana, 12 to 18 inches, blue or white, April or May, is early blooming.

C. dealbata, the Persian Centaurea, 2 feet, June and July, has good foliage with pink flowers.

C. macrocephala, 3 to 4 feet, July, has spectacular, thistle-like, golden flowers. Although stiff and awkward, it makes an interesting accent in the border.

Centranthus ruber. Jupitersbeard. Height, 24 inches.

The *Centranthus*, a native of the chalk cliffs of England, is one of the perennials we may always depend on, even under dry conditions. The rose pink flowers are borne in profusion from July until September. There is also a white variety. They are easily grown from seed or division.

Cerastium tomentosum. Snow-in-Summer. Height, 6 inches; white; May.

The white flowers and silver-gray foliage are very effective. Unless trimmed back after blooming, the plant becomes bare in the center. Its vigor often smothers less vigorous nearby plants.

Chelone lyonii. Pink Turtlehead. 3 to 4 feet; pink; August.

Prefers moist ground and partial shade but will grow in other places. Usually preferable to our native *C. glabra*. Excellent foliage.

Chrysanthemum. Chrysanthemum. Included in this group are a variety of forms.

C. hortorum, the Common Chrysanthemum, comes in many interesting varieties and colors. Planted in a rich, well drained soil, it is best divided each spring and given a liberal application of fertilizer. May be wintered successfully by lifting and storing in coldframes. Korean Hybrids are interesting. There are few, if any really hardy chrysanthemums.

C. maximum, often called the Shasta Daisy, has many varieties, the better ones propagated by division only. Best divided every year or two.

C. coccineum, commonly called Pyrethrum, Painted Daisy, or Painted Lady, ranges in color from white to deep red. Single and double varieties. Varieties are best propagated by division. They prefer full sun.

C. arcticum, the Arctic Daisy, 8 to 10 inches, September and October, is worth growing.

Christmas-Rose. See *Helleborus*.

Clematis. Clematis.

The dwarf or shrubby forms of clematis offer a slightly different note, of both foliage and habit of growth, to the perennial border. They are all propagated by divisions, by cuttings, or seeds.

C. recta, 3 feet, white, blooms in June and July.

C. integrifolia, 2 feet, blue, June to August.

C. heracleaefolia davidiana, 3 feet, deep blue, August and September, is fragrant, and is usually considered more desirable than *C. erecta* or *C. integrifolia*.



Fig. 13.—Rock gardens require a suitable as well as an artistic setting and background to develop their individuality and beauty.

Clove Pink. See *Dianthus*.

Columbine. See *Aquilegia*.

Coneflower. *Rudbeckia*.

Convallaria majalis. Lily-of-the-Valley. Height, 8 inches; May.

Although ideal for dry, or moist shady places, where few other things will grow, it will respond to rich soil. Divide every three or four years. Try it among the shrubs in the shady corners and fertilize it yearly.

Coralbell. See *Heuchera*.

Coreopsis grandiflora. Coreopsis. Height, 2 to 3 feet; yellow; June to October.

Coreopsis hardly needs an introduction to any of us. Shear the plants back in July to secure a late crop of bloom. Set new plants every two years. Probably one of the best loved garden flowers and certain to give results. Self sows profusely.

C. verticillata, *C. rosea*, and *C. auriculata* are interesting forms.

Daylily. See *Hemerocallis*.

Delphinium. Larkspur.

Despite popular opinion, *Delphinium* and Larkspur are synonymous, whether they be perennial or annual. Delphinium is the scientific name, larkspur the common one. If you are growing Delphiniums for the first time you might as well buy the best strain—Pacific Giant Hybrids. Start with mixed seed then buy the more expensive named varieties. Remember that the large spikes are only produced under the best cultural conditions. You cannot grow them in subsoil that has been thrown out of the cellar even if it has been loosened with plenty of organic material, well fertilized, and well drained. Delphiniums require a well drained, loamy soil. They need at least half a day sun and are better with full sun.

Another interesting form is *D. chinense*, which comes in both blue and white, and grows only 12 to 24 inches in height.

Delphiniums grow easily from seed. Freshly collected seed will give better germination than older seed, although usually the trouble is not with the seed, but with the gardener in not knowing how to raise the seedlings. The preparation of the seedbed, as discussed on page 10, will more than pay in growing this plant.

There are several troubles which will be encountered; the so-called "blacks," where the tip of the flower stalk becomes black and curls over, is due to the cyclamen mite. At the first indication of this insect spray with Black Leaf 40 or one of the pyrethrum extracts and keep it up once a week.

Leaf spot may be controlled by spraying or dusting, as soon as the disease appears, with fermate.

The sprinkling of lime or coal ashes around the clumps to control the mite or the leaf spot is of no value, but naphthalene flakes may repel them.

Dianthus. Pinks. Height. 6 to 12 inches; June and July.

The *Dianthus* offers us many interesting forms. They usually give best results if started new every two or three years. Varieties may be perpetuated by cuttings. *D. barbatus*, the Sweet William, *D. plumarius*, the Grass and Clove Pinks, and *D. latifolius*, are the more vigorous forms. There are many other forms used for rock gardens and borders.

Dicentra. Bleedingheart.

D. spectabilis, the common Bleedingheart, is probably known to everyone, but its dwarf sister, *D. eximia*, the Fringed Bleedingheart, 8 to 10 inches high, which blooms from May to September and has good foliage throughout the season, is not so well known. The common Bleedingheart is often frosted in the spring and its foliage becomes yellow and unattractive during the summer. Bleedinghearts can be propagated by division or cuttings.

Dictamnus albus. Gasplant. Height, 3 feet; white, pink.

A showy plant for permanent plantings. If given a sunny location, good soil, and left undisturbed, they will give increasingly good results each year. Slow to grow from seed.

Digitalis. Foxglove.

The Common Foxglove, *D. purpurea*, 3 to 4 feet in height, is a biennial and often difficult to winter over. Grows in well drained soil, in either sun or shade. Shade with lath, basket, or loose mulch during the winter.

D. ambigua (grandiflora) and *D. lanata* are not so showy as *D. purpurea*, but perfectly hardy. All foxgloves usually self sow.

Doronicum caucasicum. Leopardbane. Height, 2 feet; yellow; May.

Early flowers are always welcome and Leopardbane, with its large, yellow, daisy-like flowers, gives an interesting spot of color in the garden or as cut flowers for the home. Although Leopardbane may be raised from seed, it is usually easier to buy plants and divide them. They will grow in sun or shade, and prefer good soil and drainage.

Echinacea purpurea. Hedgehog-Coneflower. Height, 3 to 4 feet; rosy purple; July.

The purple Coneflower with its bold striking bloom of rosy purple, with a dark cone in the center, is rather unique. The stiff upright growth of the plants serve as an interesting accent. Although they may be grown from seed, the colors are often not as good as selected varieties which may be purchased. Once the plants are secured they are easily propagated by division. Although standing dry location, they prefer a good soil. They are excellent as cut flowers.

Echinops. Globethistle.

Coarse thistle-like plants, useful either in the border, among the shrubs, or as cut flowers. They may also be dried for winter bouquets. Vigorous, easily grown plants, propagated by seeds, root cuttings, or division. *E. ritro*, 2 to 3 feet, has steel blue flowers, and *E. sphaerocephalus*, 5 to 7 feet, has blue flowers. Both bloom mid-summer.

English Daisy. See *Bellis*.

Eryngium. Eryngo.

Another thistle-like plant for the border, which may be used as cut flowers or dried for winter. It is slightly more decorative than *Echinops*, being less coarse and having more attractive foliage. There are several varieties growing from 1 to 3 feet in height, with blue flower heads.

Eupatorium. Eupatorium.

These hardy plants are adapted to adverse conditions.

E. coelestinum, the Mistflower (Hardy Ageratum), 2 feet, blue, August and September, spreads rapidly. It does best if dug up and replanted yearly.

E. urticaefolium, White Snakeroot, 3 to 4 feet, white, August, is poisonous to cattle. Grows well in the shade in town gardens. Cut off old flower heads, as it seeds profusely and may become a pest.

E. purpureum, Joe-Pye-Weed, 4 to 8 feet, July and August, is a gorgeous background or accent plant. May be collected along ditches.

Euphorbia. Spurge.

There are a number of *Euphorbias*, including *E. corollata*, which is a weed in some sections of the country. Outstanding, however, is *E. polychroma (epithymoides)*, which forms a compact plant about 1 foot high. Its yellow bracts are produced during early May. Perfectly hardy, its yellow color is always most welcome. It may be grown from seed or division.

Evening-Primrose. See *Oenothera*.

False-Dragonhead. See *Physostegia*.

Flax. See *Linum*.

Forget-me-not. See *Myosotis*.

Gaillardia. (Blanketflower). Height 2 to 3 feet; yellow red; June to November.

For continuous bloom, if the flowers are kept picked, *Gaillardia* is unexcelled. Named varieties may be propagated by root cuttings or division. Young vigorous plants give best results. Demands good drainage, prefers sun, but will stand partial shade. Varieties such as Goblin, Tangerine, and Sun God should be used.

Garden Heliotrope. See *Valeriana*.

Gasplant. See *Dictamnus*.

Gayfeather. See *Liatris*.
 Globeflower. See *Trollius*.
 Globethistle. See *Echinops*.
 Goldenglow. See *Rudbeckia*.
 Goldenrod. See *Solidago*.
 Grass Pink. See *Dianthus*.

Gypsophila. Babysbreath. Height, 2 to 3 feet; white; June and July.

G. paniculata, because of its sprawly habit of growth, is often grown in the cutting garden rather than in the garden itself. Long, deep roots help the plants to endure poor soil and dry sunny places. They should be left undisturbed. The double forms Bristol Fairy and Ehrlei are popular. There are several dwarf forms as *G. repens*. Single forms are grown from seed, but double forms must be purchased.

Helenium. Sneezeweed.

A desirable tall growing, late blooming, background plant.

H. autumnale has the varieties Riverton Gem and Riverton Beauty, with golden mahogany flowers, which are rather unusual. These grow from 3 to 4 feet high.

H. hoopesii, 2 feet, yellow, June, and *H. pumilum*, 18 inches, yellow; July and August, are good varieties. Although they may be grown from seed, it is quicker to buy the plants and divide them.

Helianthemum chamaecistus. Sunrose. Height, 6 to 12 inches; white, pink, orange, or yellow; July and July.

Although the type is easily grown from seed, to grow the varieties with the reds and oranges and larger flowers, it is necessary to buy the plants. Any of the named varieties may be propagated from cuttings during the summer.

Helianthus. Sunflower.

Our hardy native sunflowers merit a place in any garden.

H. orgyalis, 6 to 8 feet, slender drooping foliage, small yellow flowers, gives a willow-like effect quite different from any other plant.

H. maximiliana, 6 to 8 feet, blooming in October, *H. scaberrimus*, 5 feet, September, and *H. decapetalus*, 5 feet, July and August, give excellent flowers for cutting.

Most sunflowers are extremely vigorous and may become troublesome. Use in border or among the shrubs. They have one pest, the red plant louse, which is easily controlled by several sprayings with Black Leaf 40 or dusting with rotenone.

Heliopsis. Heliopsis.

Resembling the sunflowers, they are usually considered as such by most people. They are more inclined to form compact clumps than to form large spreading masses as do most of the sunflowers. *H. scabra zinnaeflora* and *Incomparabilis* are double flowered.

H. pitcheriana, 2 to 3 feet, single golden yellow flowers, June to September, and *H. scabra excelsa*, 3 feet, orange yellow, July to September, bloom earlier than Sunflower, lengthening the period of bloom. They are easily grown from seed or by division. The flowers are good for cutting as well as garden effect. Although preferring sunny situations, they will stand some partial shade.

Helleborus niger. Christmas-Rose. Height, 12 inches.

An old-fashioned flower which is just beginning to come again into its own. The evergreen foliage and the white flowers, from November to March, make it an attractive plant at all times. It is propagated by division.

Hemerocallis. Daylily.

We all know the Tawny Daylily, which we find growing wild in ditches, and some of us even appreciate its beauty sufficiently to grow it in odd corners in our yard

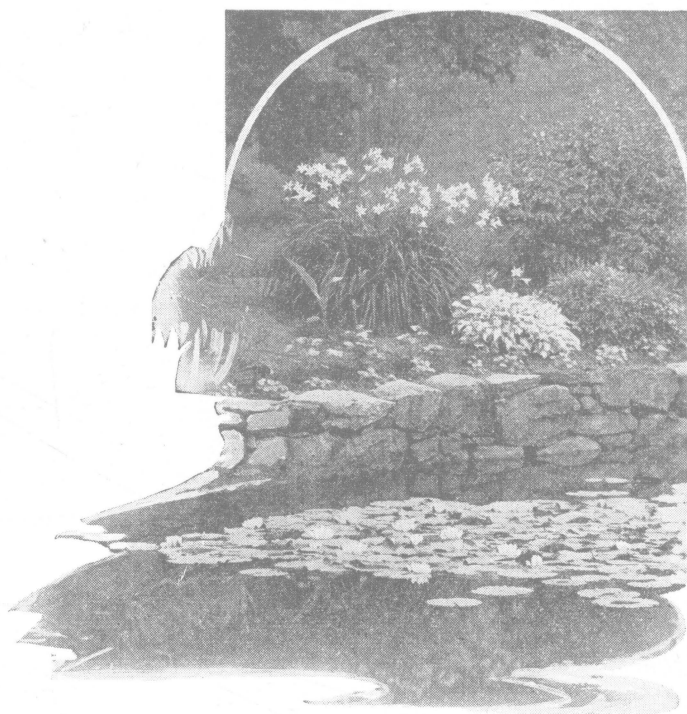


Fig. 14.—A beauty spot in the garden; here may be seen the Lemon Daylilies, variegated Plantainlilies, and Poenies on the bank; and in the water Waterlilies.

or among the shrubs. There are many other varieties available, a few of which bloom continuously, but the others bloom at different times from late May until frost. The Lemon Daylily *H. flava*, is one of the earliest, 2 to 3 feet, very fragrant. The Thunberg Daylily, *H. thunbergi*, 3 feet, bright yellow, produces a profusion of bloom during late June and July. There are a dozen or two other varieties in varying shades of yellow and orange, of varying heights from 2 to 4 feet, all different times of bloom. There

is also *H. kwanso*, which is a double form of the Tawny Daylily.

Every garden should have some of the better varieties of Daylilies. The newer varieties, such as Hyperion, Bay State, Crawford, Ophir, and others, give midsummer bloom. They are all large flowered. Absolutely hardy, preferring full sun, in dry or moist ground, they may be planted in the flower border, around the pools, in the rock garden, naturalized among the shrubs, or as clumps in front of the shrubs. They will bloom the first year they are planted. They will need no protection during the winter. Their foliage is good throughout the season.

Hesperis. Sweet Rocket. Height, 3 feet; white, magenta pink; June; sun or shade.

An old fashioned perennial flower resembling the radish when in bloom. The flowers are sweet scented. Self-sows profusely. May be tucked in odd corners.

Heuchera. Coralbell. Height, 8 to 15 inches; pink, white; July, August.

One of the more desirable low growing perennials, excellent foliage, profusion of bloom, easily divided. For borders, rock gardens, or among evergreens. A number of varieties are available.

Hibiscus. Rosemallow. Height, 4 to 6 feet; white, pink, red; July to September.

One of the showiest and most vigorous of the perennials. Because of its coarseness it is best grown as a shrub or as a specimen plant in front of the taller shrubs. It

will grow under practically all conditions. It is one of the last plants to come up in the spring.

Hollyhock. See *Althea rosea*.

Iberis. Hardy Candytuft. Height, 8 to 12 inches; white, April and June.

Shrubby evergreen plants with a profusion of bloom in sun or shade. *I. semper-virens* is hardiest. *I. gibraltarica* has pale lavender flowers.

Iris.

There are many different kinds of Iris, but the following are the more common types. The bearded Iris is the type most commonly grown. The plants grow under a variety of conditions, even very dry places, but they prefer sun and good soil. Best planted in July and August, they produce large clumps, which should be divided about every three years.

I. siberica. Siberian Iris. A graceful plant with tall, slender foliage and dainty flowers of white, blue or purple; will stand more moisture than bearded Iris.

I. laevigata. Japanese Iris. This variety shows gorgeous flowers when well grown. Prefers a rich soil and plenty of moisture during blooming period. Spring or fall planted.

Dwarf Iris. There are a number of dwarf varieties, including *I. pumila*, *I. cristata*, and *I. reticulata*. *Iris pumila* come in all the colors of bearded Iris, but blooms many weeks earlier. Ideal for the rock garden, border, or among evergreens.

Intermediate Iris are hybrids between the dwarf and the tall bearded Iris.

Iris are easily propagated by division. The choice of varieties depends on the individual taste. Visit the garden of an Iris fancier and select those that suit your taste and pocketbook.

Japanese Spurge. See *Pachysandra*.

Jupitersbeard. See *Centranthus*.

Kniphofia (*Tritoma*). Torchlily (Redhot Poker-Plant). Height, 2 to 3 feet; orange, red, yellow, white; August and September.

For sheer brilliancy of color there are few flowers that can equal the Torchlily. Although sold as a perennial, it often winterkills unless stored in sand in a coldframe or cold cellar. *K. quarimiana*, which blooms in May, is perfectly hardy, but not nearly as showy as *K. uvaria* (Pfitzeri). There are a number of named varieties now available.

Larkspur. See *Delphinium*.

Lathyrus. Everlasting Sweetpea. Height, 4 to 6 feet; white, red, pink; July to September.

The so-called Everlasting Sweetpea, although it is completely lacking in fragrance, is very satisfactory on fences, arbors, and trellises. Once established it lasts for years. Prefers sun. Easily grown from seed or divisions.

Lespedeza formosa (*Desmodium penduliflorum*). Purple Bushclover. Height, 4 to 5 feet.

Although this is ordinarily classed as a shrub, it dies to the ground like all the rest of the herbaceous perennials. Its tall graceful stems and dropping sprays of purple-red flowers during August and September make it worthy of any garden. It may be used among the shrubs or in the back of the perennial border. It grows in full sun in any well drained soil.

Liatris. Gayfeather (Blazing Star).

It seems strange that one of our conspicuous prairie flowers has not found its way more commonly into our gardens. Although being found naturally in a variety of forms, some are more showy and desirable than others.

L. pycnostachya, 4 to 5 feet, early August, produces tall, slender spikes, the upper 2 feet a mass of rosy purple flowers. This should be included in every garden. September Glory is similar but blooms in early September.

Other interesting forms are *L. spicata* and *L. scariosa*. These are lower growing forms and not so showy as *L. pycnostachya*.

In their native habitat you will find *Liatris* growing in open sunny places in sandy soil, but it adapts itself to any garden. It may be propagated from seed or division. Good drainage is essential.

Lily-of-the-Valley. See *Convallaria*.

Limonium (*Statice*). Sea-lavender.

L. latifolium is an interesting plant with rosettes of leathery leaves and large airy flower heads 1½ feet high. Flowers are purplish blue, which are effective both on the plant and when dried for winter bouquets. The Sea-lavender may be grown from seed, although the seedlings are a little difficult to handle. The plant requires a sunny, well drained location.

Linum. Flax. Height, 10 to 24 inches; blue; July to September.

The flax is a dainty, airy sort of a plant with delicately colored flowers. For blue flowers *L. perenne* and *L. narbonnense* are both good. *L. flavum* has yellow flowers. There is also a white variety of *L. perenne*. The *Linums* are easily grown from seed or division. Although growing in any good soil, they demand good drainage and full sunlight. They do not transplant easily.

Loosestrife. See *Lythrum*.

Lychnis. Campion.

The various varieties of *Lychnis* offer interesting brilliant flowered plants.

L. chalcedonica, the Maltese cross, 3 to 4 feet, vermillion scarlet flowers, gives a rather stiff accent planting. It has salmon and white flowered varieties. Like all *Lychnis*, it seeds profusely and usually self sows.

L. coronaria (usually catalogued as *Agrostemma*). Rose Campion. Height, 18 to 24 inches; June and July.

The Rose Campion, with its bright magenta flowers and silver gray foliage, although absolutely hardy, is not always a satisfactory garden flower because of the difficulty of using it without its color clashing with other flowers. The white form is preferable for this reason. The plants are easily grown from seed, and will grow in any soil in full sun.

L. haageana, 1 foot, June to August, produces large flowers 1 to 2 inches in diameter on weak sprawling stems. It is a charming plant either for the border or rock garden, preferring partial shade and adequate summer moisture.

L. viscaria, 8 to 10 inches, June and July, produces an abundance of pink flowers.

Although preferring a good soil, most of this group are able to withstand drought. Except where noted, they should be grown in full sun. They may be easily grown from seed or by division.

Lythrum salicaria. Purple Loosestrife. Height, 4 to 6 feet; rose; July.

A native plant growing along streams, but adapting itself to any soil, sun, or shade. Varieties *superbum roseum* and Perry's are preferable to the native forms. *L. virgatum* is a dwarf form that should be more widely used. Propagated by seed or division.

Meadowrue. See *Thalictrum*.

Milkweed. See *Asclepias*.

Mistflower. See *Eupatorium*.

Monarda didyma. Beebalm. Height, 3 to 4 feet; red; June and July.

Thriving in sun or shade, it has aromatic foliage and showy flowers in many shades of red. Usually propagated by division. Are pink, white and maroon varieties.

Monkshood. See *Aconitum*.

Myosotis. Forget-me-not.

There are many possibilities for its use as a ground cover—among the evergreens, beneath the shrubs, around the pool, or in the flower border itself. Forget-me-not

thrives in either sun or shade, and with a liberal supply of moisture will give profuse bloom.

M. palustris semperflorens has good foliage throughout the season and blue flowers throughout the summer.

M. alpestris is an annual which disappears after the spring bloom, but reseeds itself. Comes in blue, white, and pink.

Nepeta mussini. Caucasian Catnip. Height, 8 to 12 inches; blue; May to September

One of the best dwarf all-season bloomers for sun or shade. Best types grown from cuttings, selected from seedlings. May be used amongst the evergreens, in rock gardens, as a ground cover, or in the border.

Oenothera. Evening-Primrose.

These large bright flowers add a gay note to the garden. Their extreme vigor gives them a tendency to become weeds unless controlled. They all prefer sun. Easily obtained from seeds or by division.

O. fruticosa and *O. youngi* June to September, have deep yellow flowers.

O. missouriensis is a showy trailing variety with yellow flowers and winged seed pods.

Pachysandra. Japanese Spurge. Height, 8 inches.

Unquestionably the finest evergreen ground cover that we have for shady places. It can be used among the evergreens, as a ground cover, in the rock garden, or among the shrubs. If planted in full sun it often sun scalds. Easily grown by division or cuttings.

Paeonia. Peony.

Peonies are usually best planted in beds by themselves or as groups in front of the shrub border, rather than among other perennial flowers, the reason being that during the blooming period they smother surrounding plants. Many people may not agree with this suggestion, but it is worthy of consideration.

Peonies do best in full sun in a well drained and well fertilized soil. Tree roots, shade, and deep planting often prevent blooming. Plant during September placing the eyes or buds of the clumps about 2 inches below the surface of the soil. Set the plants from 3 to 4 feet apart each way.

Once established, peonies should not be disturbed for a number of years unless it is desired to propagate them.

Much of the alleged peony blight, that is, browning and dying of the buds, is caused by improper growing conditions. The tops of the plants should be left on until they naturally start to brown in the fall.

True peony blight, which is relatively rare, may be controlled by spraying or dusting the surface of the soil around the crown with Fermate just before growth starts in the spring. Cut off and burn peony tops in the fall.

Ants cause a lot of worry but no damage when found on the buds. They may be destroyed by dusting DDT around their nests.

Painted Daisy. See *Chrysanthemum*.

Painted Lady. See *Chrysanthemum*.

Papaver. Poppy.

There are many varieties of hybrid poppies.

P. orientale, the Oriental Poppy, with its huge flowers during May and June, gives a range of color from white, through pink, salmon, to scarlet and crimson. Although ordinarily 2 feet high, the varieties Wurtembergia, Lulu Neeley and others grow 3 to 4 feet high with 9 to 10-inch flowers. The variety Olympia, a semi-double scarlet, is more vigorous than other varieties. Oriental poppies are best transplanted during August when they are partially dormant. Although they may be grown from

seed, the best varieties are from division or root cuttings. The flowers are among the most vivid in coloring, and, therefore, are likely to cause color clashes.

Poppies may be used as cut flowers if the ends of the stems are seared in a flame or dipped in boiling water as soon as cut.

P. nudicaule, the Iceland Poppy, 8 to 12 inches, will bloom all summer if given sufficient moisture and partial shade. *P. alpinum* is similar but smaller. *P. rupestris* is a hardy and satisfactory variety.

Penstemon. Beardstongue.

An interesting group, many of them native. *P. barbatus torreyi*, with its 2-foot spikes of coral flowers, is satisfactory if staked. *P. gloxinoides* is very striking but not always hardy. There are a number of hybrid forms in blue, pink, and white worthy of trial. *P. sensation*, however, is best grown as an annual. There are also a number of alpine *Penstemons* for rock garden use which are rather difficult to grow.

Peony. See *Paeonia*.

Periwinkle. See *Vinca*.

Phlox. Phlox.

It is difficult to visualize a successful garden containing no forms of Phlox. From early spring to late summer Phlox decorates our garden.

P. decussata, the common garden Phlox, is the most showy of all kinds. The choice of varieties depends largely upon the individual taste, although it will pay any gardener to buy the very best, even though slightly more expensive. This Phlox, especially, requires considerable moisture during the summer and will appreciate liberal watering during dry spells. There is one outstanding myth in connection with this type of Phlox, and that is, that the flowers revert to the magenta color. If we will but keep seeds from forming we will not have this difficulty, since many of the seedlings produce this color and eventually crowd out parent plants.

In digging either good or poor varieties of Phlox, it is essential to remove all the roots, since a 1-inch piece is sufficient to produce a new plant. It may be propagated either by division or root cuttings.

One serious pest is the red spider, which is easily controlled by dusting with sulfur. Mildew is serious some summers and may likewise be controlled by dusting with sulfur.

P. suffruticosa resembles the above, but blooms earlier. The outstanding variety is Miss Lingard, a white.

Of the other varieties of Phlox, most of them dwarf, we have *P. subulata*, or Moss Pink, 6 inches, which comes in white, pink, and lavender. *P. amoena*, 6 inches, together with the above, make an excellent ground cover and may be used in the rock garden or border.

P. divaricata, 8 to 10 inches, is a native blue Phlox, the so-called Wild Sweet William. This will soon make itself at home in the garden, seeding itself here and there.

The dwarf forms of Phlox are usually propagated by division or stem cuttings. and since they are early spring blooming, are best planted in the fall. All Phlox, especially the taller varieties, appreciate liberal fertilization.

Physostegia. False-Dragonhead. Height, 3 to 4 feet; lavender, pink; July.

This is another native plant, with a marvelous ability to grow, which sometimes causes it to become a pest. Its spikes of lavender and pink flowers are useful for cutting. Although it does well in average soil, it will also grow in wet places, as it is normally found growing wild along stream banks on low ground. The plants work in nicely around the pool, or they may be naturalized. Normally they grow in the sun, but they will stand quite a little shade. The variety Vivid is only 2 feet in height, brilliantly colored, and blooms later in summer. *Physostegia* is easily grown

from seed, but the better varieties by division. They should be divided every year or two.

Platycodon. Balloonflower.

One of our hardiest garden flowers, the Balloonflower, is easily grown from seed. *P. grandiflorum*, 3 feet, and its variety *mariesi*, 12 to 15 inches, are both very fine. Their white or purple flowers are produced throughout the summer.

One word of warning is necessary in regard to the Balloonflower; it usually comes up late in the spring, so we are inclined to think that it has died and thus injure the crown in digging to find it.

Plumepoppy. See *Bocconia*.

Polemonium. Polemonium.

These plants are always welcome because of their bright blue flowers and fern-like foliage. *P. caeruleum*, Greek-Valerian, 2 feet, and *P. reptans*, 8 to 10 inches, a native form, are both desirable. They are easily grown from seed or by division, and will grow in any good soil in either sun or shade.

Poppy. See *Papaver*.

Primrose. See *Primula*.

Primula. Primrose. Height, 4 to 10 inches; April to July.

Hardy primroses with their dainty flowers, many of them blooming in early spring, others later in the spring, are always welcome. The hardier and more vigorous varieties *P. elatior*, *P. veris*, *P. polyantha*, and *P. japonica*, will soon make themselves at home and multiply. The following varieties, although usually perfectly hardy, are not as vigorous and will require better conditions for the best results: *P. auricula*, *P. cashmiriana*, *P. cortusoides* and others.

The primroses may be grown from seed, but they are slow to germinate unless the seed is sown as soon as ripe. The seed is best sown by itself where it may be left undisturbed and well cared for until ready to transplant. Once plants are secured, they are easily divided, preferably after blooming. All primroses prefer a moist soil with good drainage, and will do better if given slight shade. It is usually advisable to grow the seedlings under a lath shade for the first year and to keep the soil well mulched with peat moss.

Primroses are very satisfactory in the rock garden, charming among evergreens and naturalize especially well in shaded spots.

Ranunculus. Buttercup, incorrectly called Batchelor's Buttons.

Brilliant yellow flowers are produced during May and June, on plants that are absolutely hardy and extremely vigorous. *R. acris* is slightly taller and will stand more moisture than *R. repens*. The double forms of these are preferable. Once secured, these plants are easily multiplied by division. Best used as ground covers.

Redhot Poker-Plant. See *Kniphofia*.

Rockcress. See *Arabis* and *Aubrieta*.

Rose Campion. See *Lychnis*.

Rosemallow. See *Hibiscus*.

Rudbeckia. Coneflower.

Rudbeckias are native plants usually found growing in open fields, so we should grow them in full sun.

R. speciosa and *R. subtomentosa* both resemble the common Black-eyed Susan.

R. maximum is a huge plant, 6 to 8 feet, with large yellow flowers, 4 to 5 inches in diameter and a 2-inch cone in the center. Although rather open straggly plants with cabbage-like leaves, they are attractive when grown as an accent in back of the large flower border or amongst the shrubs.

The Goldenglow is a double form of *R. laciniata*. Although rather coarse for many gardens, it has to be respected for its ability to grow and produce flowers under

all conditions. The red plant lice, which are practically always found on the flower stems, are easily controlled by spraying with Black Leaf 40. For rented houses, for spots where it is difficult to make other things grow, the Goldenglow, if given a little fertilizer, will soon form a large clump.

R. purpurea, the Purple Coneflower. See *Echinacea*.

All the *Rudbeckias* are excellent cut flowers and good border plants. All the varieties except Goldenglow may be grown from seed.

Salvia. Sage.

It is interesting to note that in all of the really hardy *Salvias*, white, blue, and purple are the only colors.

S. azurea, 3 to 4 feet, August and September, produces an abundance of light blue flowers on tall slender spikes. It often requires staking. Its large root system enables it to thrive under adverse conditions.

S. farinacea, although usually listed as a perennial, is seldom hardy. It is discussed in Bulletin 101, "Annual Flower."

S. pitcheri, deep blue, resembles, *S. azurea*.

S. patens is the most showy of all because of its brilliant indigo blue. Unfortunately, the rather large flowers are not produced in profusion.

S. sclarea and *S. nemorosa* are decorative with their coarse hairy foliage. The flowers are not conspicuous.

All *Salvias* are easily grown from seed and most of them may be easily divided.

Saponaria. Soapwort.

Everyone knows our native Soapwort, *S. officinalis*, so common along the railroad banks and waste places. Despite its greedy nature, it is sometimes the best solution for difficult bank planting problems in our own yard.

S. ocymoides, 6 to 8 inches, in both white and pink, is a showy trailing plant, producing a profusion of flowers during the late spring. Easily grown from seed or cuttings. It should be grown in a sunny, well drained spot.

Saxifrage. Saxifrage.

The *Saxifrages* have come into prominence with the present demand for rock garden plants, but in addition to the distinctly rock garden types, there are some that are adaptable to general garden use. These plants are easily propagated by division and will grow in any soil, in sun or partial shade.

S. cordifolia, 12 to 15 inches, has large glossy foliage and pink flowers. It may be used in the border, in front of shrubs, or in larger rock gardens.

Scabiosa. Scabiosa. Height, 2 feet; blue; June and July.

The perennial Scabiosa with its blue flowers, if given a well drained, sunny location, is sometimes satisfactory. At other times it is rather a weak grower and inclined to die out over winter. Although interesting as cut flowers, the plants are usually rather straggly. For the best results plant in the border. They are easily grown from seed.

Seaholly. See *Eryngium*.

Sedum. Stonecrop.

Another group of plants that has again become popular within the last few years. Many of the forms are adapted only to rock garden work. One of the finest forms for flower gardens is *S. spectabile* Brilliant, forming clumps 12 to 15 inches high, producing a mass of brilliant rose colored flowers during August and September.

S. kamtschaticum, June, 6 to 8 inches, has orange flowers.

S. sarmentosum, 4 to 6 inches, is one of the most rapidly growing varieties, often so much so it becomes a pest.

S. sieboldi, 6 inches high, pink, flowers in September, is unusually charming, but more difficult to grow.

S. spurium, *S. acre*, *S. album*, *S. reflexum*, and *S. sexangulare* are all vigorous growing dwarf forms.

All the *Sedums* are easily propagated by divisions or by cuttings.

Silene. Catchfly, Campion.

A dainty group of plants belonging to the Pink family. Useful for the front edging of a border or among evergreens are *S. alpestris*, white, and *S. schafta*, rose, both of which grow from 4 to 6 inches high, the first one blooming in June, the second, from July to September. They are easily grown from seed and will bloom in any sunny spot.

Snakeroot. See *Eupatorium*.

Sneezeweed. See *Helenium*.

Snow-in-Summer. See *Cerastium*.

Soapwort. See *Saponaria*.

Solidago. Goldenrod.

It seems a pity that the many fine forms of our native Goldenrod are not more often used in our gardens. They offer good foliage, never fail to bloom, and never winter kill. The taller forms may be used among the shrubs or as a background. They are easily collected and may be propagated by division. Some will be found growing in low wet ground, others on dry sandy hillsides, although all are highly tolerant of a wide range of conditions.

Speedwell. See *Veronica*.

Stachys lanata. Woolly Betony. Height, 12 inches.

An old fashioned plant with gray silver hairy foliage. It is used entirely as a dwarf foliage plant. The flowers do not amount to anything. Although it may be produced from seed, it is easier to divide it. Unless grown in well drained soil these plants may be difficult to winter over.

Statice. See *Limonium*.

Stokesia laevis. Stokesia.

It is surprising that this charming little plant is not more widely grown. The plants are about 1½ feet high, and produce a profusion of white, or lavender-blue flowers from July until October. Not only are they useful in the border, but are excellent as cut flowers. They are easily grown from seed or division, and will thrive in any well drained soil in full sun.

Stonecrop. See *Sedum*.

Sunflower. See *Helianthus* and *Heliopsis*.

Sunrose. See *Helianthemum*.

Sweet Rocket. See *Hesperis*.

Sweet William. See *Dianthus*.

Thalictrum. Meadowrue.

The Meadowrue in its various forms adds grace to the perennial border, both with its foliage and flowers, or gives us satisfaction in the shady spot.

T. adiantifolium has very fine foliage with white flowers in June.

T. dipterocarpum, probably the most showy of all of them, 4 feet, lavender, in August; *T. glaucum*, blue-gray foliage with fragrant yellow flowers in July; and *T. aquilegifolium*, 2 to 3 feet, purple, June and July.

The *Thalictrums* readily grow from seed, or the plants are easily divided. Although preferring well drained, shady places with moisture during the summer, they will grow in the full sun.

Thrift. See *Armeria*.

Trollius. Globeflower. Height, 18 inches; yellow, orange; June.

Resembling a giant buttercup just before it opens, the Globeflower, in its several

forms with yellow and orange flowers, is a wonderful sight when in full bloom. The plants prefer a rich moist soil with sun or partial shade. The better varieties are propagated by division, although very nice ones may be secured from seed, sown in the fall.

Torchlily. See *Kniphofia*.

Tufted Pansy. See *Viola*.

Tunica saxifraga. Saxifrage Tunicflower. Height, 6 to 8 inches; pink, June.

A dainty, grass-like plant with small pink flowers, produced throughout the summer. May be used either in the flower border, in the rock garden, or rock wall. It usually seeds itself or may be propagated by division.

Turtlehead. See *Chelone*.

Valeriana officinalis. Valerian (Garden Heliotrope). Height, 3 to 4 feet; white, June.

An old-fashioned vigorous growing perennial with divided foliage and fragrant flower spikes. It is easily propagated by division. See *Centranthus*, which is commonly listed as a form of Garden Heliotrope.

Veronica. Speedwell.

The genus *Veronica* gives us a wide range of varieties, some dwarf, some tall, but all perfectly hardy. All the following *Veronicas* may be easily grown by division and most of them from seed. Out of the many varieties, we might choose the following:



Fig. 15.—Myrtle (*Vinca minor*) used on shady terrace. English ivy in right foreground.

V. maritima (*longifolia subsessilis*), 2 feet, July to September, is unquestionably the finest of all *Veronicas*, with luxuriant foliage and large flower spikes. This is one of the few, however, that cannot be obtained from seed. It must be propagated by division or cuttings.

V. rupestris, 3 to 5 inches, June, makes a good ground cover.

V. incana, 12 inches, is a silver-gray-leaf plant, with blue flowers.

V. spicata, 18 inches, violet-blue, June and July.

There are a number of other varieties.

Vinca minor. Common Periwinkle.

Next to the *Pachysandra*, this is the most highly desirable evergreen ground cover. Thriving in sun or shade, it may be used on banks too steep to mow, among the evergreens, beneath the shrubs, and in the little spot between the house and the sidewalk where it is too shady for other plants. It is easily propagated by division. Bowles varieties preferred by some. (See Fig. 15.)

Viola. Violet.

V. cornuta, the Tufted Pansy, comes in a variety of forms, which will produce flowers throughout the summer. Similar to this are the hybrids, such as Jersey Gem, G. Wermig and others. These are the modern forms of what our grandmothers knew as Johnny-Jump-Ups.

Nor should we overlook in connections with the others, *V. odorata*, the Sweet Violet, which is hardy throughout most of Ohio.

Although the violet and its hybrids may be raised from seed, the better varieties, once they have been secured, should be propagated by division or by cuttings. All of this group, for best results, demand a good soil with plenty of moisture throughout the summer, but well drained in winter.

Wallcreass. See *Arabis* and *Aubrieta*.

Wild Indigo. See *Baptisia*.

Windflower. See *Anemone*.

Wormwood. See *Artemisia*.

Woundwort. See *Stachys*.

Yarrow. See *Achillea*.

Yucca filamentosa. Yucca (Spanish Bayonet, Adam's Needle).

It seems too bad that many people are prejudiced against this useful plant, merely because it is hardy enough to survive in old cemeteries and roadside ditches. There is no plant that gives the same interesting winter effect. It is absolutely hardy and will grow under all conditions. It may be used among the evergreens, in the rock garden, in the perennial border, or as an evergreen spot in connection with the shrub border. If we do not care of the flowers, we may cut them off. It is easily grown from the suckers, which are freely produced.

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